The Citrus Industry

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MORE ORANGES—FEWER GRAPEFRUIT

The most recent Federal estimate of the 1943-44 citrus yield indicates an increase in orange production and a decrease in the yield of grapefruit, compared with the 1942-43 production.

Exclusive of Florida and California Valencias, the government estimate for the national production of oranges and tangerines is 46,650,000 boxes, an increase of 13 percent over the 1942-43 harvest. Florida Valencias are expected to yield 17,500,000 boxes as against 18,100,000 boxes last year.

The national production of grapefruit, exclusive of the California "summer" crop, is placed at 46,516,000 boxes, compared with 48,614,000 boxes last season. Florida's total production this season is expected to reach 24,500,000 boxes, ten percent less than last year; Texas is expected to produce 16,800,000 boxes, four percent under last year's yield. The anticipated reduction in the Florida yield is expected to be in the seeded varieties, which is placed at 13,500,000 boxes compared with 17,000,000 boxes last year. The seedless varieties in Florida are expected to yield 11,000,000 boxes, an increase of 7 percent over a year ago.

The Arizona crop is placed at 3,900,000 boxes.

With shipments early in the season curtailed by price ceilings, there has been an absence of the usual rush of immature fruit to Northern markets. The government ban on the shipment of early fruit from Texas also has operated to hold down shipments of grapefruit.

Growers generally feel that the price ceilings proposed by the Office of Price Administration are discriminatory and are hopeful that the program proposed by the War Food Administration may be substituted as the basis for fixing such ceilings. At this writing the controversy between those two federal agencies has not been settled, but leaders of the industry are making a strong presentation of their case to Economic Stabilization Director Vinson. Until final decision is reached heavy shipments are not expected to go forward.

WOULD CONTROL WAGES

The labor situation as it concerns grove owners and packing house operators continues to be a major problem, and is being seriously considered by leaders of the industry.

At a recent meeting in Lakeland, Dr. E. F. DeBusk, state supervisor of emergency farm labor, stated that suggestions had been made to the War Food Administration for appointment of a state wage board, which would conduct hearings and study statistical and other data in connection with the labor and wage situation.

Last year the industry suffered material loss from the aggravated labor shortage and the situation this season promises to be even more serious unless steps are taken at once to alleviate the existing conditions.

With price ceilings as they are, and as they doubtless will be continue to be for some time, growers feel that they cannot afford to go through with another season of wage skyrocketing such as that with which they were confronted a year ago. They are hopeful for early action by the Emergency Farm Labor Board.

DR. WILMON NEWELL

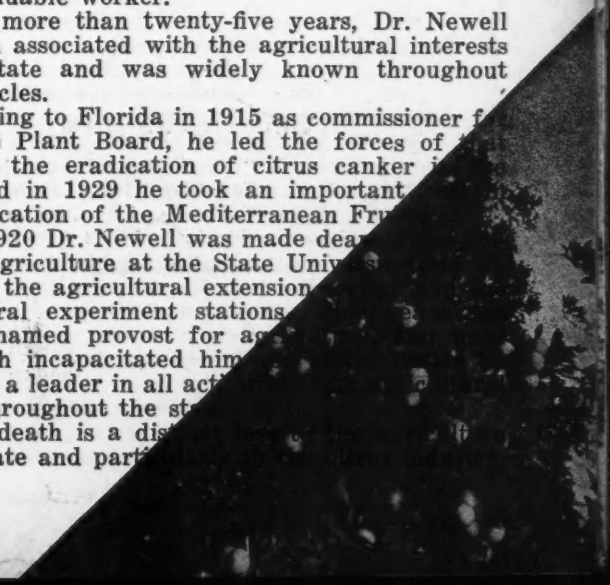
In the recent death of Dr. Wilmon Newell, provost for agriculture at the University of Florida, the citrus industry of the state loses a good friend and a valuable worker.

For more than twenty-five years, Dr. Newell had been associated with the agricultural interests of the state and was widely known throughout citrus circles.

Coming to Florida in 1915 as commissioner f[or] the State Plant Board, he led the forces of [the] board in the eradication of citrus canker i[n] state, and in 1929 he took an important [part] the eradication of the Mediterranean Fru[it].

In 1920 Dr. Newell was made dea[n] lege of agriculture at the State Univ[ersity] rector of the agricultural extension [service] agricultural experiment stations [and] he was named provost for ag[riculture] his health incapacitated him [in] had been a leader in all act[ivities] nature throughout the st[ate].

His death is a dis[tinct loss] of the state and part[icularly]



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The Utilization Of Florida Fruits And Vegetables [1/]

By J. L. HEID
U. S. Department of Agriculture, Agricultural Research Administration, Bureau of Agricultural and Industrial Chemistry, Agricultural Chemical Research Division, Winter Haven

(Prepared by request for presentation to the Florida Horticultural Society meeting at Winter Haven, Florida, on May 26, 1943, and for publication in the printed proceedings.)

This opportunity to report upon the work at the Citrus Products Station is appreciated. At this laboratory four research fellows of the Florida Citrus Commission and three chemists of the United States Department of Agriculture are investigating the utilization of Florida fruits and vegetables by canning, dehydration, fermentation, concentration, chemical preservation and by recovery of constituent products.

The Citrus Commission research fellows work exclusively upon Florida grapefruit, oranges, and tangerines. The federally employed chemists give citrus crops major consideration, but also work with other fruits and vegetables of present or potential commercial importance in this area.

The normal purpose of this work is to develop and demonstrate methods of utilization which may be used by growers as a means for stabilizing the marketing of crops. Uncontrollable variations in quality and quantity of production, and in consumption through fresh produce marketing channels have placed growers of perishable crops in a disadvantageous position. The stabilizing influence of profitable outlets for off-grade and surplus fruits has been repeatedly demonstrated. An example has been the record of profitable lemon and Valencia orange production on the west coast contrasted with the instability of navel orange marketing until profitable by-product uses were established for this fruit.

An example in the Florida citrus industry has been the instability of tangerine prices in the absence of a by-product industry to absorb sizes, grades, and quantities which could not be advantageously shipped.

Whether growers have been helped by a by-product industry has depended upon whether it was operated in their interest or otherwise. Where effective grower organizations have controlled half the capacity of the by-product industry, competition between independent and cooperative plants for raw materials and for markets has usually resulted in a favorable situation.

Under war conditions the objectives of investigations at the Citrus Products Station have been altered to meet emergency needs in relation to developments in uses, containers, and shipping and storage facilities, and the needs of government agencies purchasing for military use and for Lend-Lease shipment to allied nations.

Shortages of tin, rubber, fuels, labor, fertilizer and shipping facilities and the special needs of military agencies and allied nations have resulted in many problems. Pectin, concentrated juices, and dehydrated foods are among the commodities for which there is a great demand. The purpose of this paper is to review some of the work which has been, and is being, done on making advantageous use of crops produced in this section.

II

Leached Pomace: The pectin shortage turned attention to the problem of providing domestic and foreign jam any jelly makers with a compact pectin base, the manufacture of which required a minimum of special equipment. Tests at the Citrus Products Station demonstrated that by separating the seeds from grapefruit cannery residue and chopping and leaching the material in boiling water, then rinsing in several changes of cold water, pressing, drying, and grinding, a neutral pectin base could be prepared from which jam and jelly manufacturers could readily extract the equivalent of fifty grade pectin by boiling for thirty minutes with the fruit or juice to be used in making a jellied product.

Commercial production of this material has begun in Florida, and the material may be exported as well as supplied to domestic jam and jelly makers. **Tangerine Utilization:** Tangerine production varies greatly from year to year; picking costs are high and a considerable portion of each crop is unmerchantable because of size and grade restrictions. A by-product outlet has been needed, but mechanical difficulties in extracting the juice and the fact that the canned juice undergoes undesirable flavor changes has discouraged the development of such an industry. The peel oil has been recovered, and the pressed residue has been dried for feed, but this use does not permit sufficient returns to cover growing and picking costs. Juice is the principal constituent of the fruit.

Tests were undertaken to determine the possibility of:

1. Separating unstable constituents by filtration or partial flash concentration so the juice could be canned.
2. Preparing a high-vitamin-content bland syrup for table, confectionery, and medical uses and for use as a humectant in tobacco products.
3. Preparing vacuum concentrated beverage bases.

Results obtained with the canned juice were least promising and no entirely satisfactory products were obtained.

Bland syrup retaining 75 percent of the original Vitamin C content and having an attractive flavor and appearance was prepared from the juice by filtrations with calcium carbonate and charcoal followed by vacuum concentration. The excellent table quality and high vitamin content of the syrup plus resistance to deterioriation suggest substitu-

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The Fertilizer Outlook for Florida Growers and Farmers

By CHARLES J. BRAND
Executive Secretary and Treasurer, The National Fertilizer Association

**Prepared for The Citrus Industry
Bartow, Florida**

A year ago the farmers of this country were faced with a shortage of fertilizer nitrogen. This shortage was met largely by reducing the average nitrogen content of mixed fertilizers and by eliminating nitrogen on the wheat crop. In some sections of the country there were local shortages of phosphoric acid and potash, but as a whole farmers used more phosphoric acid and potash during the past year than were ever used before in any one year.

Now, for the year 1943-44 we expect to have available for use as fertilizers much more nitrogen than we have ever used before and considerably more superphosphate. Nevertheless, there will not be enough of either of them to serve our ends except by exercising prudence and care. On the other hand, we shall have to get along with definitely less potash than we used this past year. Due to the shortage of animal feed, less organic nitrogen will be available for use in fertilizers than has been used in the past. I am speaking of the country as a whole. Florida manufacturers, no doubt, will make every effort as in the past to obtain as much organic nitrogen as possible. Dr. A. F. Camp's article in the September issue of **The Citrus Industry** clearly shows how essential natural organics are.

The Office of Price Administration will establish, in the near future, a dollars-and-cents ceiling price for each grade of fertilizer to replace the present maximum prices which were established in the spring of 1942 by the "freezing" method, based on the prices that prevailed from February 16 to 20 inclusive. Later these were increased slightly in some areas. However, the new maximum prices, generally speaking, are not expected to vary much from those now in effect, and farmers may therefore be assured that prices will be about as reasonable this fall and next spring as they have been in the past.

The level of fertilizer prices is so low relative to prices of farm products at the farm that demand for commercial plant food is the greatest in our history. As of August 15, 1943, the index number of commodities used in farm production was 164; of commodities used for farm family maintenance, 172; of farm wages, 251; of prices received by farmers for all farm products, 190; while the index number of fertilizer prices was about 120.

Fertilizers are the lowest-priced commodity the farmer can buy. In fairness to the farmer, it should be said that taking agriculture as a whole prices of farm products have not fared too well relatively in the years that have passed since 1890 when the Bureau of Labor statistics' index number work began to cover the facts. In only seven of the intervening years have prices of farm products at the farm enjoyed what some might consider a price advantage over all commodities. Incidentally, farm commodities, which are generally lower-priced, are included in the all-commodity index number. The years of farm price advantage were 1910 when the phrase "the high cost of living" was on everyone's tongue; the World War I period, 1917-1920 inclusive, and 1942 and 1943. In 47 out of 53 years farm products were at a disadvantage based on the average prices that prevailed from 1909 to 1914.

The tonnage of mixed fertilizers that will be produced and sold in 1943-44 will undoubtedly set a new record. The consumption of all

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THE UTILIZATION OF FLORIDA FRUITS AND VEGETABLES

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tion for fruit juices or concentrates in the rations of soldiers in areas where fruit juice products cannot be conveniently supplied in satisfactory condition.

Concentrated beverage bases retaining 80 percent of the original ascorbic acid of juice were made from filtered tangerine juice. The pleasant, mild flavor and high food value would render these products suitable for use in a wide variety of carbonated and distilled beverages. An interesting beverage base was also prepared from the unfiltered juice.

Combined with the recovery of flavoring oil for use in beverages and confections and of cattle feed from the residue, the manufacture of these tangerine products should enable growers to stabilize the marketing of their crops.

Citrus Confection: At the request of the Florida Citrus Commission, an investigation was undertaken of the possibility of preparing a five-cents-per-packaged confection of balanced food value to compete with candy bars.

In cooperation with the Cereal Section of the Agricultural Chemical Research Division, formulae were developed for cookie and marshmallow sandwiches which combined balanced food value with excellent flavor and keeping quality. Orange marshmallow filler was made, substituting orange-oil-flavored orange concentrate for sugar and water. The cookie formula contained sweetpotato flour, peanut butter, brewer's yeast and dried egg. The plastic texture of the cookies rendered them suitable for wrapping and dispensing from automatic vending machines or otherwise without breaking. The flavor was praised by all tasters and since the product contained carbohydrates, proteins, fats and appreciable quantities of vitamins C and B it was a better balanced food than sugar candy. Use in war plants as a subtstitute for ordinary candy bars might contribute to the health of workers.

Vitamin Survey: In cooperation with the Florida Canners Association, the Citrus Commission research fellows a completed survey of the retention of vitamin C during canning of grapefruit juice in a dozen plants representing the various types of processes used in the state. Retention of more than 95 percent of the original vitamin C content of the fruit was found in plants where best adapted methods were employed. A forthcoming report will permit processors and buying agencies to observe what methods are favorable for optimum retention of vitamin C.

Dehydrated Fruits and Vegetables: An important project at the Citrus Products Station is a survey being conducted in cooperation with the Florida Agricultural Experiment Stations on the suitability for dehydration of fruits and vegetables grown in this section. Tests have been made of the vtiamin content and dehydrating properties of a wide variety of vegetables grown on muck and other sols. Ratios of fresh to dried material have been measured and excellent dried products have been prepared. Vegetables which have been tested include: cabbage, sweet and Irish potatoes, rutabagas, English and pigeon peas, brocolli, spinach, rape and mustard greens, carrots, celery and string beans. This work has been helpful to government agencies and commercial operators interested in the establishment of vegetable dehydration in this area.

Fruit products which have been dehydrated include guavas, papayas, and citrus pomace, marmalade stock and juices. The high vitamin content of guavas and papaya renders the dehydrated pulps interesting for inclusion in concentrated rations. Products of satisfactory flavor and appearance have been prepared.

Dehydration methods may be applied to reduce the weight of marmalade stock forty to sixty per cent for shipment to allied nations. A method was developed for dehydrating orange juice without added absorbent material, and a patent has been requested to protect the process for public use.

Concentrated Juice: Studies are in progress on methods for improving the quality of vacuum concentrated citrus juices. These concentrates are used by military agencies and are exported to allied nations where they are rationed to children and nursing mothers. A report on methods was published in the May and June issues of "Food Industries."

Equipment is being designed and installed which will permit a study of the possibility of improving the quality of concentrates by concentrating at very low pressure with variations in other conditions of operations.

Juice Canning: Analyses were made to determine changes in the petroleum-ether soluble constituents of canned orange juice; and tests were made of the effect of adding various antioxidants. No other antioxidant has been found to be as effective as sulfur dioxide, and this material is being extensively used in fruits and juice products for export to England in paraffin-lined barrels. In the absence of metal containers, sulfur dioxide is of value in retarding flavor changes and loss of vitamin C in fruit products. However, sulfur dioxide tends to destroy B vitamins and should be used only where they are not important factors. The sulfur dioxide is substantially removed from fruit products by boiling, usually under a high vacuum, before they are consumed as foods.

During two seaosns, the Florida Citrus Commission research fellows prepared test packs of oranges and grapefruit juices in tin and glass to compare the changes which occur during storage at various temperatures. Tests for the 1942 season confirmed previous observations that glass-packed citrus juices should be held under cool storage (below 60° F.) to retard darkening and the development of off-flavors.

Utilization of Processing Plant Wastes and Residues: Among the products which can be recovered from citrus processing plant liquid and solid wastes are: dried feed, feed molassas, essential oil, seed oil, pectin, narigen, alcohol, critic acid, p-coumaric acid, lactic acid, feed yeast, phloroglucinol and rhamnose. Some of these are now produced commercially. The possibility of recovering others has been demonstrated by laboratory tests.

At the request of the Florida Canners Association, the Florida Citrus Commission research fellows at the Citrus Products Station will undertake a study of methods for recovering feed yeasts and other products from liquid citrus wastes with the production of a clear-effluent which may be disposed of without nuisance hazard. Difficulties in obtaining suitable personnel have delayed work on this subject, but efforts will be made to expedite progress during the 1943-44 season.

A study has been undertaken of the composition and potential value of sludges separated during the manufacture of feed molasses from feed plant press liquor.

Cooperative Work: An important phase of the work at the Citrus Products Station is cooperation with other agencies and with commercial

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Green-Spotting In Relation To Time Of Day That Early Oranges Are Ripened[1/]

Presented At Meeting of Florida State Horticultural Society

Introduction

Quite frequently shippers of early oranges encounter a degreening difficulty which is known as "green-spotting" or oleocellosis. This malady does not manifest itself until after the fruit has undergone the ethylene treatment, when it appears as irregular green splotches scattered over the surface of an otherwse yellow orange. Close inspection reveals that these splotches consist of irregular green lines between or surrounding the oil vesicles in the rind. Since many of these green oranges are classified as culls, this type of fruit is often a total loss to both producer and consumer, particularly in the fall when canneries are not runnng. The immediate cause of this spotting is well known, Fawcett having found in 1915 in investigations in California that minute quantities of citrus rind oils would produce green spots after acting on the rinds for only a short time. These results were later confirmed by workers in South Africa and by Burger in Florida.

Fawcett stated that the effect of a given amount of oil from the rind was greater on fruit in a moist atmosphere than on similar fruit in a dry atmosphere, and that the effect was greater on green or immature fruit than on fully colored or mature fruit. Furthermore it is the opinion among many citrus growers in Florida that green-spotting is the direct result of picking oranges too early in the morning or picking when the leaves of the trees are wet with dew or rain. In view of this it appeared that the relationship, if any, between early picking and improperly colored fruit should be thoroughly investigated.

Procedure

The present investigations were conducted at Orlando and were begun in 1941 and continued in 1942. In each experiment a crate of oranges was picked at sunrise, one at noon, and one at sunset. In order to make the samples as uniform as possible the oranges in the morning, noon, and night picks were collected from the same trees, and

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1/ By Erston V. Miller, Physiologist, and J. R. Winston, Senior Horticulturist, Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, U. S. Department of Agriculture.

THE FERTILIZER OUTLOOK FOR FLORIDA GROWERS AND FARMERS

(Continued from page 5)

fertilizers in the calendar year 1942 was just over 10,000,000 tons, and it now appears that consumption in 1943 may reach 11,000,000 tons. In 1938, five years ago, total consumption was 7,548,000 tons. Hence our consumption during the next year will be about 50 per cent greater than in 1938, and any talk about shortage of any kind of fertilizer must refer to a shortage as related to wartime demand and not a shortage as related to past use.

In 1942 Florida farmers and growers used a total of 655,000 tons of all kinds of commercial fertilizer, which was just 100,000 tons more than was used in 1938. Florida ranks fourth among all states in the consumption of fertilizer, the first three being North Carolina, Georgia and South Carolina. The sale of tax tags for the first seven months of 1943 indicates that the consumption of fertilizer in Florida this year will set a new, all-time record.

Florida farmers and growers have a larger stake in fertilizers than those of any other state in the Union. They use more fertilizer per acre of fertilized land and they fertilize a higher percentage of the acreage under cultivation, much of this acreage receiving two or more applications a year. The average rate of applications on the acres fertilized in Florida is 960 pounds, whereas the United States average is only 293 pounds.

We have recently been studying the use of fertilizers in all States in 1942, and in this study H. R. Smalley and R. H. Engle, of the Association staff, whose assistance I wish to acknowledge, had much help from the agronomists and horticulturists of various States. In fact, our estimate as to fertilizer used on the different crops in Florida is based entirely on figures supplied by the staff of the Florida Experiment Station. Figures as to acres fertilized, crop value produced by fertilizers, and total cost of fertilizer are based largely on our own survey made in 1938, which included 1,300 interviews with Florida growers and farmers in some 25 counties.

The acreage of crops grown in Florida in 1942, including the fruit crops, totaled 1,570,000 acres, of which we estimate that 1,367,000 acres or 87 per cent, received fertilizer.

We estimate that the 665,000 tons of fertilizer used in Florida in 1942 was divided among the different crops as follows:

Citrus	365,000 tons
Vegetables	165,000 tons
Other fruits	20,000 tons
Corn	31,000 tons
Potatoes	31,000 tons
Tobacco	14,000 tons
Cotton	8,700 tons
All other crops	20,300 tons

It will not surprise anyone in Florida to state that 84 percent of the fertilizer used is applied to the citrus and vegetable crops. It may, however, surprise many to learn that of all the fertilizer used on fruits and vegetables in the United States 35 percent is used on those crops in Florida, and that of all the fertilizer used on fruit crops alone in the United States 58 per cent is used on citrus and other fruits in Florida.

In our survey of 1938, each grower was asked to estimate the effect of fertilizer on yield: the yield that he would expect to obtain without fertilizer as compared to the yield obtained by using fertilizer. By summarizing these grower estimates, we have calculated that 83 percent of the total crop production of Florida, excluding pastures, may be attributed to fertilizer use. The comparable figure for 1938 was 71 percent, but since then consumption of fertilizer has increased about 18 percent and there has been a corresponding increase in crop yield.

The total value of all crops produced in Florida in 1942 was $165,000,000, and our figures would indicate that $138,000,000 represents the increased value produced by fertilizer. Florida farmers spent about $23,000,000 for fertilizer in 1942, and threfore received about $6.00 in increased crop value for each dollar spent. I realize, of course, that this is not all profit,

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DR. WILMON NEWELL
Provost For Agriculture, At The University of Florida
Recently Deceased.

Shipment Of Texas Grapefruit Limited By WFA

To meet requirements for canned grapefruit juice and other grapefruit products, the War Food Administration has limited early shipments for fresh consumption of white grapefruit produced in the lower Rio Grande Valley region of Texas, and said that a portion of the crop may be required to be set aside for processing. The restricted area embraces the counties of Cameron, Hidalgo and Willacy.

Texas shipments of white grapefruit for fresh use from Oct. 15, to Jan. 1, 1944, will be limited to approximately 2,000,000 boxes. Individual handlers will be permitted to make shipments from the restricted area during this period of a quantity not exceeding 20 percent of their total 1942-43 season's grapefruit shipments. The action was taken in Food Distribution Order 85 and Director Food Distribution Order 85.1 issued recently.

The Food Distribution Administration said that these limitations on grapefruit shipments are necessary in order that adequate supplies will remain, after the opening of the processing season, to meet both the military and civilian requirements for the processed fruit. The limitations also will serve to extend marketing of the fresh fruit over a longer period.

Since processors do not begin operations during the first six or eight weeks of the season, Food Distribution Administration officials said the limitations placed on early shipments are necessary to prevent undue diversion of the fruit into the fresh market. The restrictions will also result in an increase in the total crop yield, because growth continues during the early part of the season. Grapefruit, like most citrus fruits, will remain on the trees for several months after reaching maturity and the harvesting season can be extended throughout this period.

In view of the extremely short supply of other fruits and somewhat reduced supplies of grapefruit, it is believed that, without some restrictions, the shipments of grapefruit into fresh market channels would be so large that inadequate supplies would remain to fill essential requirements for processing. To assure that these processing requirements will be met, a portion of the crop may be required to be set aside later in the season, officials advised.

Provisons for setting aside the fruit are contained in Food Distribution Order 85. Such regulations may not be placed into effect, however, until the early part of December when the canning season in Texas should be well under way.

Present plans are to permit handlers to meet any set-aside requirements either by delivery of fruit directly from the grove to the processing plant or from the packing house to the processor. This would prevent undue strain on transportation facilities and permit a more economical handling of the crop. Shipments of grapefruit in Texas in past seasons usually have been made directly from the grove to the processing plants, the Food Administration pointed out.

The prospective Texas grapefruit crop from the 1943-44 season is estimated at 16,800,000 boxes. This compares with 17,100,000 boxes produced last season. About 8,000,000 boxes are needed for processing. This represents about 48 percent of the estimated Texas grapefruit crop as compared with approximately 45 percent which was processed last season.

1944 Food Goals List More Crops, Fewer Livestock

Food production goals for 1944 call for higher acreages of food and feed crops and smaller numbers of hogs and broilers on Florida farms were adopted at a meeting of leading farmers and representatives of all Florida agricultural agencies and the War Food Administration in Gainesville Oct. 14-16.

Principal increases are being asked in tomatoes, snap beans for fresh market and processing, cabbage, peanuts, oats and hay, and flue-cured tobacco. Smaller increases are requested in corn, Irish and sweet potatoes, hens and pullets, cattle and calves, lima beans, cucumbers, eggplant, escarole, watermelons, carrots, Iceberg lettuce, and peppers.

Acreage devoted to shade tobacco and production of eggs, sheep and naval stores are expected to be practically identical with 1943. Decreases are anticpated in cotton, sugarcane for sugar, milk production, and production of broilers, turkeys, hogs, and strawberries.

The goals were set after thorough discussion of shortages of labor and equipment which Florida farmers will face in possibly increasing severity next year. Belief was expressed, however, that slightly more nearly ample supplies of equipment and fertilizer will be avalable for 1944.

H. G. Clayton, chairman of the Florida USDA War Board, said the following goals were adopted:

Corn, 775,000 acres, up 4 percent; peanuts grown alone 300,000 acres, up 12 percent; peanuts to be picked and threshed, 150,000 acres, up 10 percent; oats, 40,000 acres, up 67 percent; tame hay, 160,000 acres, up 12 percent; cotton, 46,000 acres, down 2 percent; Irish potatoes, 35,000 acres, up 9 percent; sweet potatoes, 30,000 acres, up 15 percent; flue-cured tobacco, 17,300 acres, up 27 percent; sugar-cane for sugar, 33,000 acres, down 2 percent.

Total acreage in commercial truck crops is expected to be 117 percent of that in 1942-43. By principal truck crops, the figures for acres and percent of the past season's acreage follow:

Cabbage, 15,000—150; green peas, 1,000—67; lima beans, 5,500—102 snap beans, 63,000—109; celery, 8,000—91; cucumbers, 7,500—115: eggplant, 2,000—118; tomatoes, 40,000—157; escarole, 2,000—133; watermelons, 17,600—113; strawberries, 1,500—58; carrots, 1,000—143; Iceberg lettuce, 2,000—118; peppers, 7,500—106; miscellaneous vegetables, 12,000 acres and 88 percent.

While citrus is not one of those crops in which the acreage can be controlled from year to year, growers with idle lands are requested to put those acres into cultivation to essential food crops where possible, in order that the state may reach the added production described by the War Food Administration.

With total feed supplies short, decreases in numbers of most animals were requested. The group expressed the belief that, if the price is raised and sufficient labor is provided, a milk production goal of 347 million pounds could be attained, which would be 95 percent of 1943.

Egg production at the same level, 19 million dozen, was requested. The number of hens and pullets would be increased by 12 percent to 2,605,000, while the production of chickens for flock replacement would be reduced 9 percent to 5,300,000. Commercial broiler production would be lowered from 5,688,000 to 4,447,000 and turkeys would be reduced from 120,000 to 110,000.

Sows to farrow in both spring and fall would be reduced to 91 percent, or 105,000 spring and 86,000 fall.

The goals for cattle and calves on farms would procure a 5 percent increase to 1,095,000 next year, but this number would be considerably reduced by 1945.

Sheep and lambs on farms are expected to remain at 23,000 head.

Naval stores production is expected to continue at the same rate, 64,300 units.

While no goals were set for home gardens, the group was emphatic in the belief that these should be increased in number, size and quality.

Price Ceilings For Citrus Unchanged

Price ceilings issued for citrus last season will continue in effect until the regulations are changed, the Florida Citrus Commission said in replying to a flood of inquiries from growers and shippers.

To November 15, f. o. b. ceiling prices for interior Florida fruit packed in 1 3/5 bushel wirebound boxes are $3.27 for oranges, $2.50 for white seeded grapefruit and $2.69 for white seedless grapefruit, it said.

Indian River f. o. b. ceiling prices to the same date, in the same container, are the same for oranges, $2.79 for white seeded grapefruit, and $3.27 for white seedless grapefruit. Under amendment 3 to MPR 292, the current regulation, f. o. b. ceilings change downward on Nov. 16.

Some Federal officials working on new citrus ceilng prices have indicataed they hope to make them effective Nov. 16, Marvin H. Walker, secretary-manager of the Commission said, though he added he was by no means sure a new order would be issued by that date. He reported the following developments:

1. The proposal of the War Food Administration for ceiling prices at the consumer and retail levels, which would reflect parity instead of comparable tree prices, has been delivered officially to the Office of Price Administration, which has as yet made no commitment on it.

2. The action of the state banking committee in voting against agricultural subsidies makes uncertain the proposed government support price on grapefruit to be utilized for the civilian pack of grapefruit juice, and may affect the entire processing program for citrus fruits this season.

3. OPA has decided to allow

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THE FERTILIZER OUTLOOK FOR FLORIDA GROWERS AND FARMERS

(Continued from page 8)

that it costs something to apply fertilizers and that harvesting and marketing costs must be paid before there is a real profit. Nevertheless I believe that these figures which I have just given illustrate the tremendous contribution that fertilizers are making to our war program, and also explain the exceedingly heavy demand for fertlizers that now prevails. The cost of fertilizer to the farmer has increased only very moderately since the war began, whereas farm prices and income have increased very greatly.

Up to this point I have said nothing as to the effect of fertilizer on quality, but I believe it is safe to say that it would be a practical impossibility to produce high-quality fruits or vegetables in Florida without the aid of commercial fertilizer. I do not think that there will be much disagreement with this statement amongst the readers of The Citrus Industry.

I have not attempted, nor shall I attempt, to give any advice as to the use of fertilizers in Florida. Certainly the specialists on the staff of your Extension Service and the agronomists on the staff of your Experiment Station and its branches are well qualified to do this. There are also many practical fertilizer men in your State who have devoted years to a study of your problems and who strive to make and distribute fertilizers that are best adapted to your needs. I will say this, however: That there is no State in which the job of making fertilizers and also of making the right recommendations as to their use is more complicated than it is in Florida. In most States we in the industry deal principally with nitrogen, available phosphoric acid, and potash. There is, of course, some need and demand for the secondary and minor elements in other sections of our country, but here in Florida the secondary and minor plantfoods, particularly magnesium, manganese, boron, copper, zinc, and even cobalt, are often almost as important as nitrogen, phosphoric acid, and potash, in some instances more important.

Fire in the woods kills timber, injures labor, stops industry, robs the community, increases the taxes, and worst of all, handicaps the war effort.

GREEN-SPOTTING IN RELATION TO TIME OF DAY THAT EARLY ORANGES ARE HARVESTED

(Continued from page 7)

the added precaution was taken of picking the fruits from all sides of the tree each time. The oranges were placed in the coloring room immediately and subjected to ethylene in accordance with commercial procedure. Early in the fall the coloring period was 72 hours, but this was reduced to 48 or 24 hours as soon as the season advanced. Upon removal from the coloring room the fruits were inspected for degree of color and the incidence of green spots. During the two seasons 19 tests were conducted: 15 with the Parson Brown variety, two with the "Sixteen-to-One," and two with the Hamlin. During each season the experiments were started in advance of the commercial picking period in order to have optimum conditions for the development of green-spotting. They were continued up to and, in some instances, beyond the commercial picking of the variety.

Results

In figure 1 will be seen the result of one of the earliest experiments. These fruits were picked in October when they were uniformly green. It will be noted that 97 percent of the oranges picked in the early morning developed green spots. In the noon pick there were 66 percent with green spots while in those picked at sunset only 25 percent developed green spots. Furthermore 50 percent of the fruit picked at sunrise had all four quarters affected with this spotting while both the later lots showed a negligible percentage with all four quarters affected. The fruits could be grouped still another way. They were inspected for good, even, yellow color. There were none in this category in the immature fruit picked early in the morning. The noon lots showed 7.6 percent having an even yellow color while those picked at night contained 25 percent with a satisfactory color. It may be asked why the bars in the extreme right of figure 1 are not complementary to those on the extreme left. That is, why do not the percentages for yellow-colored and green-spotted fruits total a hundred. That is because there was still another group of fruits which fell in neither category. These showed a thin film of green over the surface without any definite spotting.

It must be borne in mind that the fruits in this experiment represented an extreme case. They were selected because of their full green color and not because they were ready for market. As the season advanced the extent and severity of green spotting became progressively less. This is illustrated in figure 2. Here we see a record of all the experiments conducted during the fall of 1942 with Parson Brown oranges on rough lemon root stock. The first points on this graph are the results represented by the first group of bars in figure 1. In the second experiment, October 16, the figures for green spotting were similar to those on October 9, i. e., 88.5 percent for the sunrise pick, 71.9 percent at noon and 29.6 percent at sunset. In the next few days there appears a sudden rise in the curves representing the noon and evening pickings. It will be recalled that this section of the state was suffering from a very severe drought last October. It so happened that the grove was irrigated on October 19, after which another collection of fruit was made on October 20. This may account for the sudden upswing in the curves for the noon and sunset picks. The turgor of the fruit in the sunrise pick probably was already too high to be increased by the irrigation.

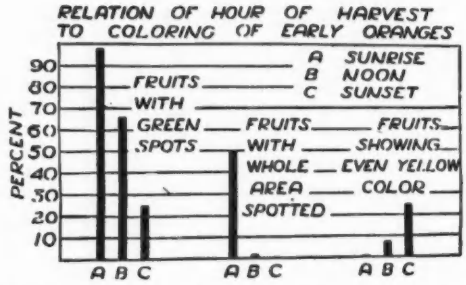

Figure 1. Relation of picking at different times of day to coloring and green-spotting of Parson Brown oranges harvested October 9 when uniformly green.

Following October 20 the chart shows a steady, downward trend in all three curves. On December 1 the

fruit was picked commercially. Accordingly sunrise, noon and sunset collections were made again. The amount of green-spotting showed very similar trends: 45.7 percent in the lot picked at sunrise; 16.9 percent in the noon pick and 7.5 percent in those picked at sunset.

The fruit on several trees was reserved for further experiments. On January 15 another test was made. The oranges had long since lost all their green color and, naturally, no green spots were produced. However, there was spotting. This time the spots were brown, rather than green. In technical reports "oleocellosis" is the name commonly applied to both this and the green spotting, the brown or green spotting effects being manifestations of the same causes operating at different times. In these January tests the trends were similar to those noted in the earlier experiments. The fruit picked at sunrise showed 19.7 percent spotting, that picked at noon, 8.4 percent, and that picked at sunset 5.4 percent.

There were 19 experiments during the two seasons. Averaging the results from all of them, which should tend to eliminate seasonal variations, sampling errers and the like, shows that the percentages of spotting in the three picks were as follows: sunrise 62; noon 43.5; and sunset 35, as shown in figure 3.

Now why should the early picked fruit show more green-spotting than that picked later in the day? Some have advanced the idea that fruit picked in the eraly morning may be colder than that picked later. That is true. Sometimes it required six hours for the early picked fruit to attain the high temperature of the coloring room. However, when fruit picked at noon was placed in a 50° F. room and lowered to this temperature prior to coloring there was no more green-spotting than on the fruit picked at noon and colored immediately. Also oranges picked at sunset were allowed to stand in boxes on the ground until next morning when they were placed in the coloring room. Again these oranges showed no more spotting than those picked at sunset and colored immediately. So it can hardly be low temperatures in the early picked fruit that causes the green-spotting.

As mentioned previously, Fawcett demonstrated that green-spotting is caused by the presence of rind oil on the fruit. It tends to fix the green pigment (chlorophyll) and prevent

(Continued on page 18)

The LYONIZER

Department

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Reports of Lyons Field Men . . .

POLK & HIGHLANDS COUNTIES

J. M. (Jim) Sample

The fall application of fertilizer is well under way in this section and will be entirely finished by Nov. 15 — the earliest fall application in many years. Quite an infestation of rust mites were noticed during October, but the scale, quite contrary to conditions last year, seems well under control. Fruit is beginning to move from this section and the cool nights are bringing out the color in very fine shape. The solids in fruit are generally lower this year as compared to last season, and this can be accounted for as a result of the heavy summer rains. There is a general feeling of optimism among growers and they expect to have a very successful season.

SOUTHWEST FLORIDA

F. W. (Felton) Scott

The first fruit from the section moved about the middle of October and was shipped by Manatee Fruit company and the Domino Citrus exchange. The fruit is of very fine quality and the movement is expected to gain momentum as ripe fruit becomes available. The demand is very good for fruit and very good prices are being paid. The fall application of fertilizer to citrus groves is now being applied and in practically every case the planting is being continued at a regular pace with leaf crops being the major planting. The tomato crop is looking good but was so delayed by early fall rains that it will be considerably later this year in reaching the market. Labor and container problems still continue to haunt vegetable growers.

HILLSBOROUGH & PINELLAS COUNTIES

C. S. (Charlie) Little

As previously reported this section has a spotty crop of fruit. By this we have reference to the fact that one grove will have a normal crop while another grove will have a very light crop. With the exception of a little melanose we have some very fine quality fruit and there is a great deal of interest being shown by buyers in getting some fruits bought up for later shipment. Very good prices are being offered and some crops have been sold. We have been going forward with the fall application of fertilizer and it now appears that most of this application will have been applied by the middle of November. A great many growers in this section are plowing their groves this fall and this is making the groves look very good. We have had some rust mite but most of these have been brought under control.

NORTH CENTRAL FLORIDA

V. E. (Val) Bourland

We are getting our fall fertilizer application under way at the present time. In practically every instance we are using a complete range of secondaries in the regular fertilizer mixtures as we have definitely proved that by using these materials in every application of fertilizer very beneficial results are obtained. Since the cover crops have been cut we are able to see that we have more fruit than was first anticipated and furthermore we have some very fine quality fruit. Practically all groves have been thoroughly sprayed and naturally this has resulted in better quality. There is considerable activity among the fruit buyers and some few crops in the territory have been sold at very good prices. Fruit movements have been light to date, but with cooler weather and fruit rapidly maturing it is expected that these movements will be rapidly stepped up.

WEST CENTRAL FLORIDA

E. A. (Mac) McCartney

There is a wealth of agricultural activity in this section at the present time. Both vegetable and citrus growers are as busy as they can be with the many duties that are to be done at this time. Vegetable growers are planting the fall crops, cultivating and taking care of the many tasks that are confronted in an effort to produce maximum yields of real quality produce. Citrus growers are making the fall application of fertilizer to their properties, cultivating their groves and in many cases giving serious consideration to the attractive offers they are receiving for their fruit crop. Fruit prices have been good and some fruit has been sold. In this section a great deal of fruit is handled cooperatively and all growers are feeling optimistic over their bright prospects for the approaching season.

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All Growers Are Welcome To Their Advice Without Obligation

GREEN-SPOTTING IN RELATION TO TIME OF DAY THAT EARLY ORANGES ARE HARVESTED

(Continued from page 15)

its removal even by ethylene. This oil may be released from the glands as the result of mechanical injury to the fruit during handling. Why is more oil released on the fruit early in the day? This is obviously due to the turgor of the fruit. High turgidity in trees early in the morning has been known to physiologists for some time.

(Concluded Next Issue)

PRICE CEILINGS UNCHANGED

(Continued from page 12)

only a 3 point instead of a 5 point "cushion" for upward changes in parity figures, reducing the anticipated 1943-44 parity tree prices for Florida fruit, as recently published, 4 cents a box on oranges and 3 cents on grapefruit. The latter change would reduce the proposed government support price on canning grapefruit from $34 to $32.50 per ton, on tree.

THE UTILIZATION OF FLORIDA FRUITS AND VEGETABLES

(Continued on page 6)

groups and individuals on projects of interest to growers and processors. Members of the laboratory have worked with Federal purchasing agencies, with State and local Chambers of Commerce, the State Defense Council and the War Production Board on problems relating to the establishment of dehydration and other industries. Cooperative projects with the Florida Canners Association, the Florida Citrus Commission, and the Florida Agricultural Experiment Stations form an important portion of this work.

This opportunity to meet with the Florida Horticultural Society may be expected to reveal additional opportunities for useful and needed work. A series of tests on the food value and product possibilities of tropical fruits has been made possible by the interest and cooperation of a member of this organization in Southern Florida.

Future Work: Among the projects for which consideration is planned at the Citrus Products Station are: Standardization of methods of oil determination and the study of the effect of various oil constituents on the quality of canned citrus juices, the possibility of developing blends of citrus and other juices, and the use of citrus juices in the canning of other fruits and vegetables.

The possibility of improving the quality of citrus juice, concentrate, and powder will receive paramount consideration. If the cost of pectin manufacture could be further reduced, it might benefit the public and the citrus growers.

Nothing is static in this or any other field. After the war, new problems will develop as a result of competition from foods fortified with synthetic vitamins. Continuous progressive investigations will be necessary to enable fruit and vegetable growers to keep their industry abrest of such developments and in a favorable position to compete for profitable, stabilized markets for these crops.

Any excuse you can give for not upping your payroll savings will please Hitler, Hirohito and puppet Mussolini.

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